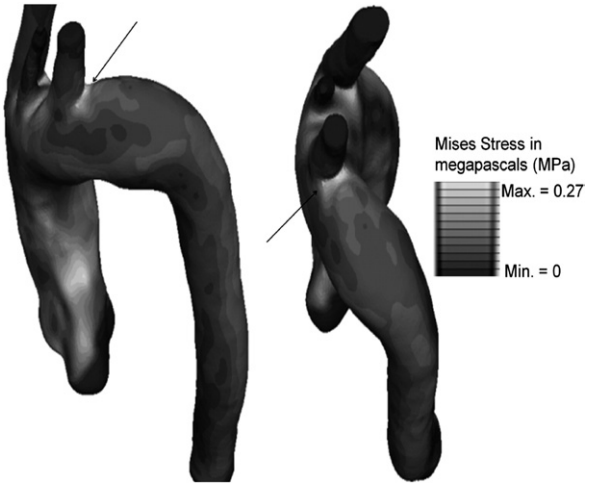
This stress distribution may contribute to the development of acute type B aortic dissections, which commonly occur at this location.



Two views of normal thoracic aortic wall stress. Stress is mapped to color with highest stress in white. Arrows indicate area of high stress distal to LSA ostium.

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PS26.

Fenestrated Stent Graft Improves Clinical Results of Thoracic Aortic Emergency

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Objectives: Thoracic endovascular aortic repair (TEVAR) has been employed as an effective initial management for thoracic aortic emergency. One of big concerns in emergency TEVAR is whether there is an appropriate proximal landing zone in an emergency situation without sufficient preoperative image data. We present our results of TEVAR for thoracic aortic emergency including usefulness of fenestrated stent-grafts to ameliorate a proximal neck problem.

Methods: Between 2001 and 2009, emergency TEVAR were performed for 86 patients with ruptured degenerative aortic aneurysm in 31, traumatic aortic injury in 23, complicated aortic dissection in 18 (13 ruptures and 5 malperfusions), ruptured anastomotic aneurysm in 9, ruptured mycotic aneurysm in 3 and impending ruptured inflammatory aneurysm in 2. When anatomically necessary, hand-made fenestrated stent-grafts were used for emergency TEVAR to preserve head vessels without head-vessel bypass-grafting. Clinical early and mid-term results were evaluated and compared between the group of fenestrated stent-grafts (the fenest group) and the group of nonfenestrated stent-grafts (the nonfenest group) placed more proximal from zone 3.

Results: Fenestrated stent-grafts were placed from zone 0, 1 or 2 in 27 patients. For remaining 59 patients, commercial or hand-made nonfenestrated stent-grafts were placed from zone 2 or 3 in 33 and from zone 4 in 26. Overall 30-day mortality rate and survival rate at 3 years after TEVAR were 8.1% (aorta-related, 4.7%) and 72.9% (aorta-related, 87.8%). Aorta-related 30-day mortality rates in the fenest group and the nonfenest group were 3.7% and 6.1% ($p = 0.677$) and aorta-related late-death free rates at 3 years after TEVAR were 95.8% and 76.1%, respectively ($p = 0.095$).

Conclusions: Emergency TEVAR was a powerful initial treatment for thoracic aortic emergency. Fenestrated stent-graft might be able to improve mid-term results of emergency TEVAR which have been reported to be unsatisfactory.

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PS28.

Clinical Utility and Safety of Noncontrast Computed Tomography for Follow-up After Endovascular Abdominal Aortic Aneurysm Repair

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Objectives: There is growing concern about radiation from Computed Tomography (CT). Noncontrast enhanced volumetric CT (NCT) has been shown to reduce radiation dose by 57-82%. In this study we evaluated the utility of NCT as the primary method of follow-up after endovascular abdominal aortic aneurysm repair (EVAR).

Methods: NCT protocol consisted of contrast-enhanced CT angiography (CTA) 1 month after repair, followed by NCT at 3 or 6, & 12 months. At each follow-up, immediate volume analysis was performed. If volume change was 2% or less, no further imaging was performed. If volume increased by >2% on nonenhanced images, contrast-enhanced CTA was performed immediately to identify potential Endoleaks. All images were reviewed by an experienced cardiovascular radiologist. Endpoints included identification of Endoleak, reintervention, and rupture.

Results: Over a 7-year period, 126 patients were followed. Serial CTA was performed in 59 controls, while 67 patients were followed with the NCT protocol. Mean follow-up was 2.07 years. There were no differences in Age, Gender, or Initial Aneurysm Volume or Size. There were 35 total Endoleaks identified. Twenty of these were early (<30days post EVAR) Endoleaks. The remaining 15 leaks were late in nature, 10 in the contrast group and 5 in the noncontrast group, $p = 0.17$. NCT aneurysm sac volume changes prompted contrasted studies in all 5 late leaks. Mean volume change was 11.2 cm3, an average change of 5.88%. These findings were not significantly different than the late leaks found by routine contrast studies, 8.9cm3 (4.98%, $p = 0.58$). There were no delayed ruptures or emergent reinterventions in the NCT group.

Conclusions: After EVAR, serial volumetric analysis with noncontrast enhanced Computed Tomography appears to be a safe and effective follow-up imaging modality. It requires the involvement of dedicated cardiovascular radiologists. Further, long-term and larger investigation is needed to confirm the safety and efficacy of this follow-up protocol.

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PS30.

The Impact of Co-morbid Abdominal Aortic Aneurysm on Outcomes After Coronary Artery Bypass Grafting

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Objectives: Unlike atherosclerotic peripheral vascular disease, comorbid abdominal aortic aneurysm (AAA) has not been studied in terms of its effects on outcomes after coronary artery bypass grafting (CABG). We aimed to determine whether having comorbid AAA affected the in-hospital outcomes of patients who had undergone isolated CABG surgery.

Methods: Using Nationwide Inpatient Sample data from 1998-2007, we identified 2, 607, 522 patients who underwent isolated CABG, of whom 32, 957 had comorbid AAA. Hierarchic multivariable regression models were used to analyze the independent effect of AAA on outcomes. Primary end points were in-hospital mortality and morbidity. Secondary end points were hospital length of stay and charges.

Results: Patients who had concomitant AAA were older (71 ± 8 vs 65 ± 11 years; $p < 0.001$) and had higher Deyo comorbidity scores (4.7 ± 1.4 vs 3.0 ± 1.7; $p < 0.001$) than patients without AAA. Unadjusted in-hospital mortality was similar for both groups (2.4% for patients with AAA vs 2.5% without AAA; $p = 0.27$). After risk-adjustment, AAA did not affect mortality (OR = 1.0; $p = 0.6$). Patients with AAA had a 20% higher likelihood of overall post-CABG morbidity (odds ratio [OR] = 1.21; $p < 0.001$). The length of stay was slightly longer for patients with AAA by 0.15 days ($p < 0.01$), and hospital charges were higher by $1291 ($p < 0.01$). Subgroup analysis revealed that patients with AAA were more likely to have cardiac (OR = 1.2; $p < 0.001$) and neurologic complications (OR = 1.2; $p < 0.005$) after CABG.

Conclusions: AAA independently predicted higher overall morbidity, specifically cardiac and neurologic complications, in patients who underwent CABG. In-hospital mortality was not affected, although in-hospital length of stay and charges were higher in patients with AAA. Because the presence of AAA appears to have an important independent influence on postoperative CABG outcomes, further studies are required to determine whether AAA should be incorporated into CABG risk-assessment models.

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PS32.

Evidence That Statins Protect Renal Function During Endovascular Repair of AAAs

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Objectives: Studies have documented a slight but significant deterioration of renal function after endovascular repair of AAA (EVAR). We investigated whether medication with statins may prevent perioperative renal deterioration.

Methods: In 127 patients receiving EVAR the medication was reliably retrievable. Patients were divided according to whether their medication included statins (> 3 months). Secondly, they were subdivided according to their supra- or infra-renal endograft fixation. Serum creatinine and creatinine clearance were determined preoperatively at six and twelve months. Patients with known preexisting renal disease, with incorrect placement of the stent-graft resulting in severe renal artery stenosis, and with occlusion or renal parenchymal infarction were excluded from the study.

Results: Patients receiving an infrarenal fixation of their graft had no change in the renal function, regardless